Specific Gravity of the ore presented by Geo Triplett 4.81

do of Stalactite Presented by Locke = 2.7 +

Frankfort 13 - to versailles 16

Nicholasville 22 - by Lancaster 25 - to Richmond, to Mt vernon London - Lynn camp to Barbourville or to Tazwell or Some other Points on Powells River

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left home Aug 22d 1846 arrived at Louisville 11. OclK P.M. August 23d Started for Frankfort by Stage 5. O. clK A.M. of 25th

---

Dr M. Smith

Chatanooga

Mr R. S. Watkins

Harrison

Hamilton county

by Indian Path Ky

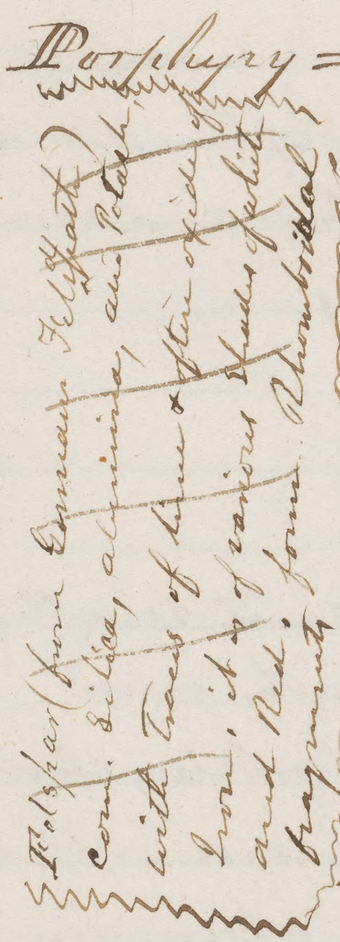
Ohioan who is to send Sampee

Miscellaneous notes &c 1.

Granite = Quartz, felspar & mica

Syenite = Felspar, quartz & Hornblend. when mica is present it is sometimes called Syenitic Granite. (= M. Roget =)

Porphyry = Rocks with a homogeneous, compact, or earthy base, through which are disseminated crystals = line masses of some other mineral of contemporaneous origion with the base. True classical Porphyry, (ancient) has a base, of compact felspar, with crystals of felspar (Hitchcock)



Greenstone = generally compound of Hornblend & felspar, the former in the greatest quantity. (ibid)

Talc = a magnesian mineral

Talcos Slate = slate in which talc abounds

Mica Slate = mica & quartz

Tr.

Chlorite = an earthy mineral of Green colour often found in the cavities and veins of Slaty rocks

Cretacious = Chalky

Arenaceous = Sandy

Argillaceous = clayey

Green Sand = arenaceous matter mixed with green earth, resembling chlorite

Hornblend = a dark green or black mineral abounding in oxide of Iron. It enters into the composition of Several of the trap rocks

Gneiss = a species of granite which from excess of mica is generally of a lamillar or slaty texture. it is a German miners name

See page 7

Augite = chemically the same as Hornblend, differing only from having crystalized under different circumstances, by which it was made cool more rapidly = (Rose)

Hypersthene = or Labrador hornblend is a furo-silicate of magnesia with traces of alumina & lime = green or reddish hue

Amygdaloid = a term not confined to any one sort of rock, but Indicates a certain form which extends

through all the trap family.
it abound in rounded cavities,
like the scoriae and pumice of
modern volcanic lavas which
are often filled with calcareous
spar, quartz chalcedony zeolites
&c when the cavities are not
filled it said to be viscular

Diallage = a mineral of a
foliated structure easily
divisible in one direction
its natural joints and
fractures exhibiting a
very different lustre
and appearance

Test for alum—
a sol of lime in w
acid; giving a wh
insipitate

Serpentine = a magnesian
rock of various colours,
and often speckled like
a serpents back

Basalt = a compound of
augite; felspar and
Titaniferous Iron and
sometimes olivine in
distinct grains, its
colour is blackish brick
or grayish, and its
texture compact and
uniform; more so than
green stone.

Verditic, a hydrated sub-
- carbonate of copper - Pat. by
decomposing nitrate of copper
with chalk - it's a Pigment

Compact Felspar = may be
distinguished from quartz
by its fusibility before the
common blow pipe, and
by its yellowish or milky
white colour. compact
felspar is sometimes called
Petrosilex

Verd. antique a beautiful
mottled green marble; it
is an aggregate of marble
and serpentine
(Brand)

Hornstone = a compact mineral,
often translucent like horn,
of various colours: in hardness

and fracture approaching flint;
infusible before the common blow pipe
and hence compound chiefly of Silica

Cornean = is between hornstone
and compact felspar.
compact and homogeneous
supposed to consist of felspar
quartz and hornblend

Titaniferous Iron = a mineral
composed of Iron and
Titanium

Gregory Watt. melted 7 oolbs of
basalt, which in cooling
formed regular columns

Pitch Stone = is a somewhat
glassy mineral resembling
pitch, usually compound
of felspar and augite, often
passing into basalt

Trachyte (Rough) a variety of
lava often porphyritic and

when containing hornblend and
augite passing into varities of trap
called basalt, Green stone, dolorite
&c

Peperino = an Italian ~~name~~
for a particular Kind of
volcanic rock, formed by
the cementing together of
Sand cinders &c

Apothomite = an alluvial
deposite composed chiefly of
pergrate of Iron, found in
Essex co massachusetts

Although gneiss and granite are
composed of the same materials
they may be readily distinguished
by the grains of former being much
finer and by the felspar and
quartz being aggregated together &
divided into strata by the mica

Trap Rock – from the swedish word Trappa, a stair: because they are often arranged in the form of stairs or steps. although the term trap is loosely applied, most writers limit to the varieties of rock called green stone, Syenitic green stone, basalt, compact felspar, clinkstone, pitchstone, wacke, amygdaloid, augite rock, Hypersthene rock, Trap-porphyry, pitchstone porphyry, and tufa

{Mascagnin - yellow oxide of lead}

Mascagnin = native sulphate of ammonia, of volcanic Districts = Desc. by mascagnin

Magnesian Limestone = is usually of a yellowish or fawn colour. Not abounding in org. remains Position – Under New R.S. Stone

Arsenate of Iron, or Skorodite may be Known from it, odour of garlic when heated

Tables of the constituents of Minerals

Earthy Minerals

	Silica	Alumina	Lime	Water	Iron	Manga.
Silica –						
Quartz –	1.00					
Opal	–					
Flint	98	2			Iron	
Calcedony	84	16				
Jasper	–	–			–	
Hornstone	74	16			10	
Leelite	75	22				3
Karpholite	37	29		11	3	20
Humo-calcite	86	3	7	4		
Garnet	43	16	20		21	
Cinnamonstone	40	23	32		5	
Idocrase	40	33	22		5	
Gehlenite	29	24	35	5	7	

10

Names	Silica	Alumine	Lime	water	Iron	Manganese
Prehnite	44	28	20	5	3	
Stilbite	58	17	9	16		
Heulandite	59	15	12	14		
Dipyre	62	25	11	2		
Davyne	45	34	13	8		
Leaumonite	50	22	12	16		
Zoisite	43	31	22		4	
Epidte	40	28	15		17	
axinite	50	16	17		9	8
Isotype	48	14	16		22	
Indianite	43	38	15		4	
Xanthite	35	14	38		13	
						Magnesia
anthophyllite	63	14	4	2	13	4
amphodilite	46	36	10	2	1	5
smaragdite	50	21	13		13	3
anorthite	45	34	15		1	5
clays	75	10	5		3	2
Kerolite	39	13		31		17
Pyrophyllite	60	30		5	1	4
Fahlunite	48	29		13	5	5

Names — Silica, alumine, Lime, water, Iron, Manganese

me [illegible] and
Louisville 11 o'clk P M 23d inst
started for Frankfort by stage 8 o'clk
A.M. 25th arrived there 2 o'clk
same day took dinner and departed
on foot for Versailles - arrived there
at dark - left in the morning 26 for
Keene 25
Versailles - (1 Mile from Versailles
saw on the surface large blocks of
Lime stone full of the same fossils
as the Kentucky Oolite consisting of
mace minute shells, corals &c)
arrived there 3 o'clk (Rain) Stayed
there until morning. left before
breakfast 27 for Nicholasville -
96 cubic feet days work Breaking rock
(Limestone) passed on through
Versailles and arrived at Lancaster
by dark, Saw at the Bridge on
the Ky. River the most splendid
cliffs of Lime Stone rock I have

Stibite	38	17	9	16		
Heulandite	59	15	12	14		
Dipyre	62	25	11	2		
Davyne	45	34	13	8		
Laumonite	50	22	12	16		
Zoisite	43	31	22		4	
Epidte	40	28	15		17	
axinite	50	16	17		9	8
Isotype	48	14	16		22	
Indianite	43	38	15		4	
Xanthite	35	14	38		13	
						Ma- nesi
anthophyllite	63	14	4	2	13	4
amphodilite	46	36	10	2	1	5
smaragdite	50	21	13		13	3
anorthite	45	34	15		1	5
clays	75	10	5		3	2
Rerolite	39	13		31		1
Pyrophyllite	60	30		5	1	1
Fahlunite	48	29		13	5	

Left home aug 22d 1826 arrivd at Louisville 11 o'clk P M 23d arrivd Started for Frankfort 4 stages 8 o'clk A.M. 25th arrivd there 2 o'clk same day took dinner and departed on foot for Versailles - arrivd there at dark - left in the morning 26th for Keene Ville - (1 Mile from Versailles) Saw on the Surface Large Rocks of Limestone full of the [illegible] the Rocky Mountain [illegible] Small univalve shells. corals &c arrivd there 3 o'clk (Rain) Stayed there until morning. left before breakfast 27th for Nicholasville - (96 cubic feet days work Breaking rock on Turnpike) passed on through N. ville and arrivd at Lancaster by dark, Saw at the Bridge on the Ky. River the most Sublime cliffs of Lime stone rock I have

ever, as yet beheld), 400 feet high, thickness of the rock from the top of the hill to the bed of the river not less than Six hundred feet, I saw in the rocks here some large Ammonites Orthoceras and other Chambered shells. 2 Left in Drawing

2 Left in Drawing

About 1 Mile from Lancaster on the road S. E. the Berry lime stone commences, here I saw the last of the Grey L. Stone a short distance beyond Cobb Ford which was full of Corals reticulating through in spars that would weigh many tons. The Berry L. Stone is overlay=ed by the black State Limestone which are on my Studies of Baltimore County. From here to the Cobb orchard in the B.I.S. several Chalybeate Springs, often are strongly impregnated with sulphuretted

=retted which is manufactured to some extent at the Location I am told. Stayed all night 3 miles from the C. Orchard passed Ames Forge, saw here in the walls some Lime Stone containing Encrinites, it burned very well like the blue limestone although altering with the Equivalent of the old Red Sand Stone. About 1 Mile by my Barometer from the high Knobs lime Stone appears as in the Blue Limestone, here is said to be the highest hill between the Potomac & Connecticut river Surface

29th Left for Mt Pleasant from the Hotel at the foot of the Knobs 1 Mile from Mt Pleasant several deep fissures, which from the length of time required for a Stone to reach the bottom, are said

Branch Left Train 75 feet above the Left of the Big Lick Branch here Our Course with the coal bearing Strata. This is the finest Location all through this Part for peach orchards Seven Sand Stone the trees live as long as apple or any other fruit trees and bear nearly every year. Passed on through Mt Vernon the same day about One mile beyond the town the road crosses on the foot of one of the Ridges the first Outcroppings on the Series; a well dril Coal here it is not more than 2 feet thick. Mr Martin say that coal Bed found lower down than 150 feet Below the Commencement of the Series. The Station is not over fifty feet above the Carboniferous Lime Stone which is 61 ft of Course the Equivalent of the Conglomerate

Stay all Night 7 Miles from Mt Vernon Aug 30. Left after breakfast the hills along here 6 or 7 hundred feet high are coal bearing Strata Saw in the Sand rock numerous impressions of the Lepidodendron, Calamites, Sigilaria and other plants the bottom of the Sandy valleys is Carb limestone found yesterday Evening a Bowlder 6 inches long Hills very high on each side with narrow Smaller valleys emptying Streams running into all of which have down a hole in the rock into the Carb limestone, this being the only Chance left for the water to get off Mt Vernon Sandstone as a Formation of Conglomerate from twenty five to thirty feet thick which Stratum is Magnificent as it is here on the Line the Conglomerate that overlays

The coal Measures (this is on Rockcastle County) crop out this Morning in the big Rockcastle River bottom several Mey high mountains this afternoon, the tops of all of them are capped with Sand Stone which on some peaks presents an very even appearance above 200 feet above the rock and the rock at most of those places I would Judge to rise up for 5 or 600 feet above the bottom of the deep valleys. The Rock throughout all this Mountainy is principally oak and poplar pine Laurel and rhododendron Lin de

Aug 31st The Sand Stone of the coal Measures between Mt Vernon and London Generally Oblique Laminae it inclines S.E. at an angle of 40° (Salt wells on Stone Creek the borings from 2 to 700 feet)

Sept 1st Started before breakfast Saw on the tops of the highest hills a few miles from London, and on high hills some 10 or 12 Miles East a soft Sand Stone of a deep red (very red) color in some places it exhibits Oblique Laminae, at others it does not seem to be laminated which this is high enough to be the Eq. of the New Red Sandstone or not I am unable to say. Stayed over 2 Nights from Lights Camp. Did not see any hard Lime Sand Stone nor coal seen found in them

Sept 2d went in the Sand Stone this morning saw nothing more of any interest

Sept 3d passed through Sandstone hills this afternoon Camped 16 miles on the South Fork of Rockcastle River, about 50 feet

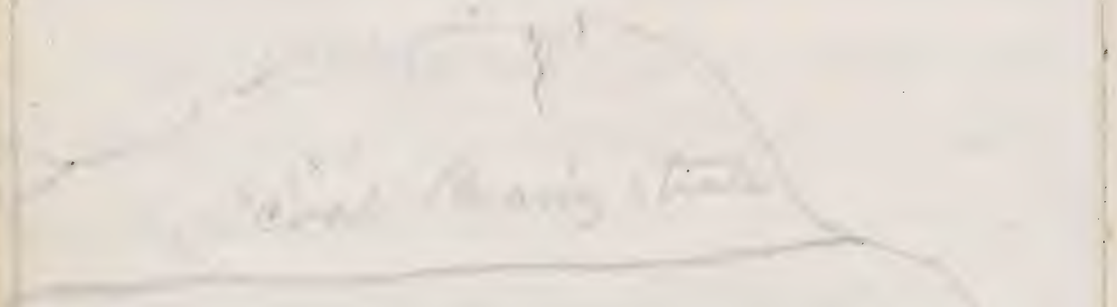
over Lewisburg and
Ronceverte through Stony
Creek to Hinton. Stony
Creek is a large stream
coming from the mountains
to the west and empties into
New River at Hinton.
Greenbrier County, 14 miles
from Lewisburg on the road
to Sewell on the top of the
Highest mountain in the
State of Coal Coal
Left the road to Lewisburg
and passing Fifteen (15) miles
from Lewisburg, the Big
Mountain commences
the top of which is 1500 feet high

and
with coal mines, works and
are along the ~~Expense~~ River.
Town is laid out on elevation of
about 75 or 100 feet above the
bed of the river a station of the
C&O and on the Tops of some of
the Mountains the surface is
covered with large fragments of
Conglomerate rock varying
from one inch to 2 feet in diameter
of a brown, the appearance of
which

Saw the Evening my distant
[illegible] and
[illegible]
Left the water through the big
Rock at the Entrance with Left
Some and Above, many of the
Sides of these Rocks, which was
in Such a Stately Style are cut=
ouded on Every Side towards
the Bottom, Especially
Under it on the Bottom, Below
Under it on the Bottom, Below
Where the Right Bank of Falls
Creek Native Rock Lights
Behind it to the S. E. Saw Bro
[illegible] to Them Days to Canada
Left this from the 1st Creek Falls Creek
Encamped Early, all in the Evening
Employed with the Rest of the Party
At Work of the Cumberland
Mountain on the Side of
of the Mountain. Left

at one mile of Creek 40° To the
N.E. Left the Creek & Course of the Creek
pass off to the S and S.W.
The Country of Mountainous Land
Land Rich Rocky to Low
& Dry & Stoney & rain Stones &
Commenced Early Day Thunder
Rain and Lightning & Some Hail
Thunder in Several Directions
I can See within the Scope of
My View Several Mountains
[illegible] Some Flakes Clouds or Fire
Going Eastward the Land
Is Rich and Rolling on the
Way Generally. The Creek Runs
on the West Side, Rocky Cover
with Timber Very Mountainous
Land and Rocky this Morning
Cliff 40 or 50 feet high 7 or 8 Miles
Land Rich from the Bottoms of
[illegible]

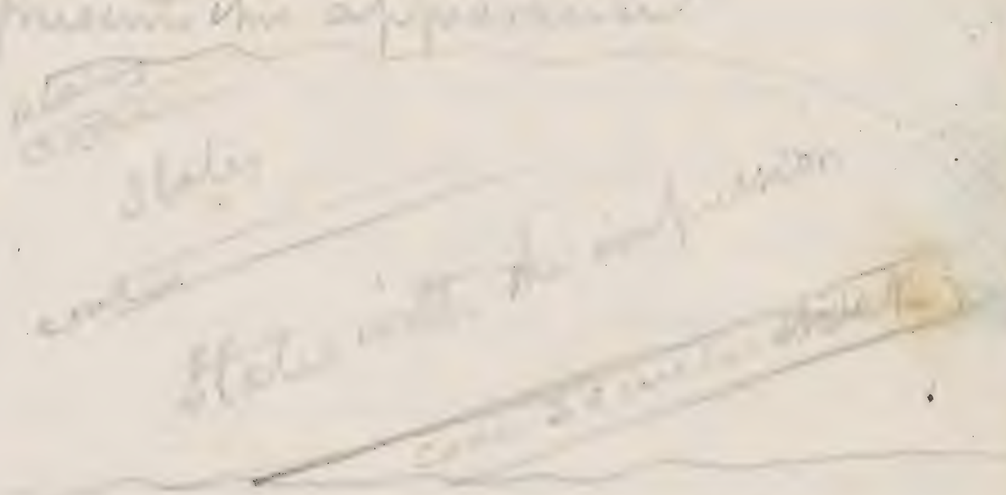
a fifteen foot rock and I said Good
Evening Sweetie. a man came
fell from the top of the cliff
200 feet and broke a million bones
and nearly committed Suicide
Stacy is all right and a good
Model in the Gym.



Coal Mining Town

Here is an excellent illustration
of my right at the big rock point
of the Island where the name appears
above at the Hotel at the foot
of the park. and a good mile and
more by road from Here to the

Left the Coal Mining Town at Cape Scott
~~Scott~~ & started the car ~~on~~ on
the west side of the Mountain And
elevated many feet above the
waters edge passing five Specimens of
suitable subjects for the Artist and
Sketch - the drop of the coast which is
a perfect picture of the Mountains to
a point at the foot of a Mountain Down
hill or Seven hundred feet high, which
presents this appearance



Sketch

Hotel at the foot of the mountain

Coal Mining Town

Here is a very perfect picture
spread over the Cape without
exception In fact without the
aid of a camera from the foot of the
hill down to the Coast of the Cape

Lawson Limestone [illegible] Ark
Fort Smith sheet on plain there
it does evidently [illegible] from
Pitkin Limestone on the creek
terrace which runs along the base of
the cliff. The contact between
the Cumberland and Lafayette members
is Cub. Limestone member
of the latter [illegible] which
runs down plain the road [illegible]
the forks of Bear. It [illegible] out
worked 1½ miles from Laynesville. The
Limestone near this place has the
appearance and composition of marble
with blue gray streak and shows
with acid. Coal seam is found by some
[illegible] a few rods east of Pond Creek
[illegible]

Sept 7. Spent the day in finding a Road—

Sept 8 Encamped a Camp and remained for [illegible] Mr Mc Kays Stand all night

Sept 9. Started down the Creek this morning. The very low form Banks & Shoals. The water so Clear as Crystal can see the Bottom when 4 or 5 feet deep. River very Crooked Meandy Short distance and the pole [illegible] as may Thought

Sept 10. Remain for Rain river very low not good Season — Saw in two or three Indians who have been hunting for Bees, on the right hand bank of the River he sold some honey for Powder for his trouble—

Sept 11. Drove 2 days & Camped on the River a very romantic pleasant

Grass Bleak the rim on the river on the Banks are sand and great Corner. The rim is about 2 to 4 feet thick mixed with flint rock in the Bank Lime Stone the rock differ but I think a little south of west the is in Clarkson County. this Bank is north by Mr Lemuel Nelson Barren Post office. Saw Some Indians at a ground a little below the above on the left of the River the rim about 12 feet from Square to Clift Rock on Mr John Bradens farm they were and Sinew, Skin of Bear in the middle I saw Some Saw a Spring on the Right hand bank of the River, that affords as great a water flow as Spring I ever Saw I saw Fish It affords Some water Cress

grow back than at present. a Gentleman told me that it Then boiled up as high as his head above the surface. the hole in the rock that it comes up through is not 7 feet across. about 10 yards back a large Space of ground in a Cultivated field on the opposite side of the river near a mile from the Spring Sunk down and at the same time the Spring ceased to flow so copiously & Brought up leaves Stones & Logs &c with the grain that was growing in the field where the spring Sunk. this field is in a S. E direction from the Spring. the rocks here are highly inclined to the S. E. I saw many large cracks & fissures in the rock near this, in the bottom of the River this geol. course was S. E. with small ones crossing them at various angles

Sept 13 Camd By all day

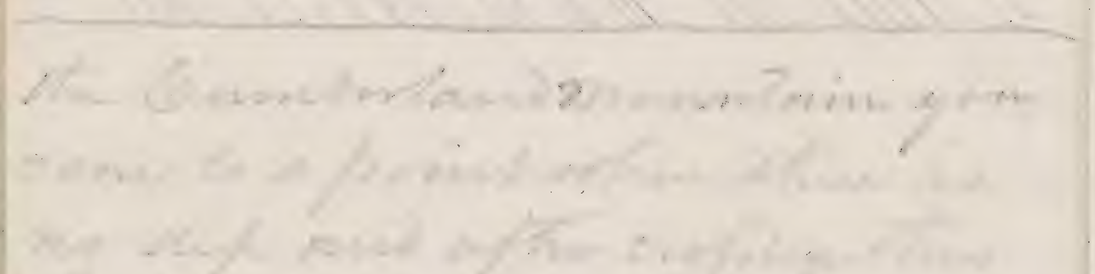
Sept 14. I explored a Cave called Kin Kaids Cave on the right bank of the river the entrance is very large being about 40 feet high and near a hundred wide, it is in a high cliff that faces the river and is many feet high. the cave is large and spacious but can not be explored far for the water, there being a Spring running from it that is almost large enough to be called a river. I saw numerous large Springs running in to the river

Sept 15. explored several canons
for many, very high vertical cliffs
on both sides of the river. some
were as high as 200 feet and
seemed to almost overhang the
river; the limestone all along
this river seems to be almost
of one entirely destitute of fossils.
Camped at the mouth of the River
Two Lodges.

Sept 16. Explored a large Cave
three miles up on the Eastward
side of the River. Many Arrow Heads
in many Localities, Saw where the
Indians had been in the habit of making
their arrow heads. Camped on the Left
bank of the River at which place
is a Cemetery of Indians with
Dead Poles on the Left bank of the River
on the opposite side of the River

Sept 17th Visited a Cemetery on
Canfield would 5 or 6 miles for
Goats Brought in Indian Dead
a Sandstone is a Mass of Sand one
running nearly in an east and
W. Course, there is mingled with
it a large proportion of Spar.
2 miles are Pigeon Roosts
Place for Silver, with no other
Indications of Minerals very
Many of the Trees have only two
arms of leaves & Compose of the
Cottonwood & Ash Leaves Shrubs Shrubs
Very are Covered by the water
Leaving over the edges of the

the Limestone strata which is
dip lightly inclined to the S. E. frequently
alternating with thin strata of sandstone
& shale dipping at the rate of 45° to the
Mountain, but on approaching



the Sandstone and Mountain gra-
vel to a point where there is
no dip and after undulating
Embankment Road dip S.E
towards the Sandstone mount.
Sept 19th Encamped on the Right
side of the River a couple miles
which are many plains of Sandstone
they generally range E. and W.
but they are sometimes in this
position ⊃ forming a cup. the
Rocks here dip S. E. at an angle of
near 45°. Met four for the night

at Clinton, it is situated on high ground
upon the edges of elevated limestone
shale, on the same ridge that the
graves before mentioned are placed. the
rocks here dip from E to W. look to
the S. E. and N. E. as below

East

N

I have on Shale walls making
fossils which I have
seen since crossing the Cumberland
Gap. There is a strata of hard
or coarse the River at the head
of Le Allen Shoals and another
about 18 miles below Clinton

Sept 20 Laid By at Clinton

" 21 Stay'd all night
and Left Clinton
3 P.M. Crossing for last time the
Rocky Shoals on this mist Pacific Riv-
ver descend by a Shoal by the

[illegible] Kentucky [illegible]
[illegible] Kentucky [illegible]
[illegible] Kentucky [illegible]

in Rowan County where flint is found, here are mixed with the Black Oxide of Manganese. Saw a locality on the R bank R of the River where the Strata is highly inclined to the S.E. and very richly stratified, with many Ripple marks, which abounds more in fossils than any place I have seen, this is about 18 miles from Kingston, about the River Rowan with the exception of the Shales —

24th Sept. Spent the day at Kingston.

Sept 25 Started at the Junction of the Tennessee and Clinch Rivers, at night on account of Rain — immediately over the point of land between the two Rivers the Ground is covered with fragments of Shells of species of Shell fish that now Inhabit the River as well as many Rounded and water pebbles, which proves that this has been once covered with water although situate at least 100 feet above the high water mark. I heard of Lead ore here, which Judging from the direction I think is a continuation of a vein I saw about 5 Miles above Kingston on S. Jones's land. 2 Saw a number of [illegible] on both sides of the River 10 or 12 Miles below Kingston. The Bluffs on the Right hand side about 150 feet in perpendicular height

Sup a locality near this where there were many fossils. Nearly annelids. saw here the ostrea and retn annelids Chambered Shells (ceratites) Crawford & Cos Iron works on white Oak Stream County. this establishment manufactures 3¼ tons of this Iron into castings per day, or 2 8.32 cwt annually. and of Bar Iron at the Blooming near 1.000 lbs pr day. in smelting the ore, which I am told is the Specular, and yields 45 per cent pure Iron. they use in Smelting they use 1/8 by measure of lime Stone to 2 Boxes to 17 of ore. and 8 tons and a half of Coal. Char Buckets of Coal. they suffer greatly about the Concord

near 60 hands and similarly in cutting wood prices are low owl to near 1/3. and there are nearly 300 persons who draw their Subsistance from the ironworks. they use no lime stone in the Blooming there is abundance weigh 700

28 Visited Williamsport in Muncy there are no gold deposits of Coal Coal worth 4 dollars per ton at the mines. the Coal is got from strata and is extracted by means of Levers or any strong pry by which the upper portion is made to fall and have no doubt but it could in other parts of the ridge and also along the Canada Coal formation for I saw at the Gap an outcropping

of a similar coal, overlying
in relation to the Mountain the
same position that the one on
the Ridge does to that of a similar
to which being found at the place where
the ridge which has been made
I have many reasons for thinking that it
is secondary deposite for it is associated
with the Carb. limestone and is
unconformable with the Silurian
in the vicinity. and the Slate is
somewhat in a transition with it,
and is only covered by a few feet
of loose earth, I have no doubt
but it lies here Limestone.
29th Left Smith & Bentley on
Mr J. D. Galaskys farm where the
strata of limestone can be seen for
ridge Standing on the strata perpendicular with
a N. E bearing. about 40 or forty
yards from this on the North N.

Limestone dips as a Stratum of lime
rock which is conformable with
the limestone which is also very
highly inclined To the S. W. course
as 40° This is the same as worked
at Greens for work. It is on the
North side of the river at first
glance it looks like the coal dips
E. E., parallel with the ride and
is the same Stratum the following the
S. boundary of the Carboniferous Rock
with this point it is very full of fos
sils as are in the limestone from
Strata as here Enclosed I send to
put back. Mr Galaskys farm
in Perry county on the L Rock and
is surrounded by rocks below the
Lime rock B. about 5 or 6 miles
by water and 3 by land below Mr
Galaskys farm I followed the Strata
of limestone on the L. Side of

of round Schist Rock Contai
Crystallized so as to bring Parts of
the rock to the position of this Stone
the Stratth in the same Rock that
shows it to Lay on Flat Surface

Sept 26 Saw many Rattle
Snakes of Several Sizes Near
the Salt Lake, as well as almost
White ones. Saw Several Mounds of the
Ancient Indians Raised over them
made before Stone pillars and Images
in this Country. some of these

this Cliff Lies the Eastern Part
with in 2 or 3 Miles of the Mountains
the rest of the way to Bear River is
Level Land Covered with

are Covered with the largest
Forest Trees, Generally Pitch
Pines they are Supposed to contain
human bones of a large size
with pieces of Earthen ware, Stone pipes
and Ornaments of Silver Beeds &c.
Some Stones Lay many

forms, as though they constituted
the ornamental of Some Chief
had fallen on a Sandy surface
Cattle, exhibit others of Large
dimensions only containing
some human frames perhaps
of a Great Chief or warrior
Oct. 1st I visited the Burying ca
on the North R of the River on a high
Round Cliff from Ten one hundred feet
high. Their works have a Rise of
More than Ninety degrees and got
owing to the fact that the River
Loess formed with Time to wash
They would appear to have at first
been on a horizontal position
This is on a Large Level Prairie
2 1/2 Miles by water, below the
mouth of White River. A number
of Mounds on the Prairie and
at the upper end of this Bluff

time as many as Eighteen Mounds
with many Large trees on the
Large Mounds are Scattered
here and there from the Center
Some Small in Size are Scattered
promiscuously and Irregularly
to the Circumference. I observed
persons on this Ground Digging
in the Mounds Leaving out human
remains Tops of Hills that are
Not over 200 feet above the
water Level are Covered with
Large quantity of Shell Fish of the
Same Species that now in Rocks
the Coast I can procure for
Specimen for other way Make by
Surveying the River from Leaf
to Leaf

Lamarck = advanced a theory that there has been a transmutation of Species from the Lyo to the more perfect animals, since the beginning of organic life on the globe: that man, for instance, began his race as a monad (a particle of matter endowed with vitality) and was converted into Several animals successively

The Hunterian Discourses articles On Geology &c by Dr.

Werner = (Saxony) inventor of the neptunian theory of the Earth 1775.

Hutton = (Edinburgh) inventor of the theory termed the "Plutonic theory of the Earth 1788.

Kirkdale = bone cavern contains the bones of 23 different genera of animals

Rock Salt – it said, by the Traveller Chardin, is so abundant, and the air so dry at Caramania in asia that the inhabitants sometimes build their houses of it

Lignite – it is said that there is near Cologne in Italy, under a bed of gravel 20

fut thick a bed of partially
fomid coal, in which whole
trees may be found, now und
=ergoing the process of mineral
=ization

Stromboli = in Italy has been
constantly burning for upwa
=ards of 2000 years

Jorullo = in mexico has not
ceased to emit flames since
1759, at which time it was
Elevated from the plain on
which it stands

Vesuvius = by an eruption of
A.D.
this mountain in 79
the cities Herculaneum &
Pompeii were destroyed

Kaptar Jokul, in Iceland in
1783 found fourth Streams
of lava that covered a surf=
=ace equal to 90 miles long

and twenty broad, making an area
equal to 1800 Square miles, variously
estimated at 100 to 600 fut deep and
averaging 130 fut deep

Mr Lyell - estimates the quantity
of solid matter carried down,
daily, during the flood season, by
the river Ganges, at 360.000.000
tons. this being 60 times the weight
of the great Pyramid of Egypt, which
is estimated at 6.000.000 tons.

Colopaxi = in south america, in
1744 found fourth flames to the
hight of 3000 fut above the brink
of its crater; and its roarings
were heard at the distance of
Six hundred miles (Dick) ~~and~~
at port Guayaquil 150 miles dist.
it was heard day and night says
Humboldt, &c. continued disch=

= ages of a battery, and these
tremendious sounds says the
same author, were even heard
on the pacific ocean

Lisbon = was dest. by an earthquake
in 1755, and it buried under
its ruins above 50.000 inhabitants
this earthquake was felt over
the greater part of Europe
africa and even in the Atlantic
Ocean, over an area of not
less than 4000,000 sq. miles

Earthquake (Dick)

In 1772 the Inhabitants of a
district of Java were alarmed
by flashes of light from one of their
volcanoes and took to flight but
before they could escape the Mt.
fell in with a tremendous noise
the ext. of ground swallowed up
was 15 Mils by 6 - 40 villages

and 3000 persons perished (Brands Dic)

Upas Valley — this valley situated
in Java, is filled to a certain height
with Carb. acid gas; it is about ½
a mile in circ. and about 35 feet
deep, without vegetation and covered
with skeletons of men and various
animals — (Brands Dic

It is also said that this gas issues
from the earth, at Bohlthal on the
Rhine, in such quantities as to be
used by a chemical manufactory;
600 pounds of the gas issue supposed
to issue from one of these pits in 24
hours — near Port Diadine, on the
Euphrates, it issues through the cracks
of the lime stone rock with a loud
hissing noise, and in such quanti
= ties as to kill animals that appro=
= ach it (Brands Dic)

a Sub Marine volcano, in Iceland in 1783 suddenly ceased its emptions when a new volcano broke out 200 miles inland. On the night in which ~~Lisbon was destroyed (1755)~~ Lima and Callao were destroyed by an earthquake four new volcanoes broke out in the Andes (Bakewell)

Aetna — at once emitting, according to Bakewell, cloud with a Stratum of volcanic sand, a space of one hundred and fifty miles in circuit 10 to 12 b.

On the 26th June A.D. 447. Subterranean thunders were heard from the Black to the Red Sea, and the earth was shaken for the space of 6 months; in many places the air seemed to be on fire, towns and large tracts of ground were swallowed up in Phrygia. On the 20th of May 020. the city of

Antioch was overturned by a dreadful earthquake and 250.000 of its inhabitants are said to have been destroyed. a raging fire covered the ground on which the city was built and the district around, covering a Surface of fourteen hundred sq miles (Bakewell)

Subterranean agitations — the Miners at Marienberg in Saxony have often been alarmed and driven from their work by agitations that were not felt at the surface

(Humboldt)

Carb. Lead or white lead are may be distinguished from Sulphate of Baryta. by affusing on the point of a knife, after heating, the flowers of Sulphur mixed with potash

or soda. if it be carb. Lead
it will make a Black spot

as seen on the Left Bank
of the River in Descending
Approach 2 Jr. M. above the Landing

Rocks on the Back of Lookout Mountain

25 feet

Light

Across Lookout Mountain and
Missionary Ridge
to Chattanooga
Hamilton Co. Tennessee

Mr. R. L. Watkins Harrison
Hamilton County — Tennessee

Mr. [illegible] Billingsley & Mr. Lewis
Mountain Lake Cockspur Georgia

Mr. James Whitaker Clayton

Mrs. Jane Whitaker and
Children of Whitaker Co. Ky.

Capt. Nicholas Van Pelt
Chattanooga

Mr. Wm. Bryan Chattanooga

Mr Abner Frazier
Belfont Jackson County
Alabama

Mr John F. Booth

Tuscumbia
Alabama

Bath Springs Perry Co

Mr Richard A. Pacton
Hamlin Co Tenn

Our Place when our Wells
are found in diging wells

Also
Mr John Shelton
to the Place of Mr
Hudson Timely
Leased By Mr
—and—
Dr Joel C. Hancock
Lauderdale

Rocks & Situations in which the different metallic ores are Generally found —

— Platina — and the other metals called Palladium — Rhodium, — Osmium and Iridium — ont found in the sands of Rivers ——

— Gold & Silver — are found in primary and Transition rocks, in porphyry and Sienite, and in the lowest Sandstone — Sometimes in coal, and very abundantly in the Sands of Rivers and Sometimes in Volcanic rocks —

— Mercury — is found in Slate, in Limestone, and in coal Strata?

— Copper — in primary and Transition rocks, in porphyry, Sienite, and occasionally in Sandstone, in coal Strata, and alluvial ground. masses of native copper many

thousands pounds in weight, are said to be found on the surface in the interior of north America.

- Iron — in every kind of Rock.
- Tin. in Granite, gneiss, mica-slate and slate —
- Lead & Zinc, in primary and Transition rocks, except trap and Serpentine; in porphyry and Granite; in the lowest sandstone and occasionally in coal Strata
- Antimony — in primary and transition mountains, except trap and Serpentine; it is also found in porphyry and Granite —
- Nickle, Bismuth, Cobalt, in primary mountains, except Limestone, trap, and Serpentine Cobalt & Nickle also occur in transition mountains, and in Sandstone —
- Arsenic — in primary and transition mountains, and in porphyry —
- Manganese, in primary and Transition mountains, and occasionally in the lower ~~Stratified~~ rocks —
- Molybdena — and tungsten, uranium and titanium, in granite, gneiss, mica-slate and Slate. the latter metals, with Chromium, Columbium, Cerium, and Selluvium, are very rare in nature, and can be reduced to the metalic State only with great difficulty.

(Bakewell)

Bromine - test for in mineral waters -
1st evaporate to crystallize most of the
salts then filter the solution and place in
a narrow tube, then add a few drops
of strong liquid chlorine - if the addition
produces an orange colour Bromine
is present - the water must be free from
organic matter, and the chlorine
not added in excess

Rocks on the top of
Hawk Cut Westmorland

Obs. 4 Oct 1860 Spring

Farm on Lookout Hill
53 acres, produce from 25 to 40
Bushels corn. Potatoes. Nash 100
Seed do not grow very well.
Medium Cumberland grass very
large. Swamp fine Beaches and
marsh thin and fine. Potatoes blight
good. Soil Red and Yellow loam
Houses Spring which is good
is about ¼ mile from the foot
of the Mountain. Orchard Maple
from the Pond back N by W. The
Whole sloping a little S of W

Sea Urchins

Echini – Multivalve – some species resemble the back of a chestnut, being round with a number of bony prickles on every side – others are shaped like a turnip stuck full of pins – mouth on the under side, and nut above – not often found fossil with its spines on – both fossil and recent but the Cassis Spatangus is never found lower than the Green Sand of the Chalk formation –

Melville Islands the coldest climate on the world 8° below zero – coal found with fossil vegitables of tropical species

Horizontal and 15 or 20 miles
above Carb. Limestone. Thence
North E. through Conglom. &
Coal form. By St Louis R. Alton
on the Right and 40 or 50 miles
above all the way Coal —
Thence By Palmyra R. Monticello
on the R — Clarksville R to within
10 miles of Ft Madison, all the
way (except near first istance at
the arriving of the River comes
near the coal on the (R). and
near Palmyra R and a short dist
below Monticello (R) when the River
winds near the Carb Limestone).
all this way with the above
exceptions in the Conglomerate
or its equivalent — Thence
By Burlington R. to near
Bloomington R. Coal form =
Thence to Davenport coal

on the Right and conglomerate
or its equivalent on the Left.
Thence about 20 miles on
North Side conglomerate
Thence To Lyons R to near Savannah R
Carboniferous Limestone —
Thence By Belleville 2 and 15
miles above Red Sand Stone
Thence Galena R to Dubuque
on the Left — Gray Limestone
from B. Lawrence
Map

The name of Big Sandy Butte
is Tennis the Platte Grande
or great water Section

Ohio

Order of the diffent formations from the mouth of the Ohio to Pittsburgh

from mouth to Paducah, Shawn Sandstand & Golconda and 10 or 12 miles further up. Carboniferous Limestone — thence five or six miles, above the first two Islands Conglomerate. thence Mt. Vernon, Evansville, Owensboro, Rockport Hawesville till five or six miles below Rome — Coal bason — Thence to Fredonia — Conglomerate again — Thence Braudenburgh to the mouth Salt River Carboniferous Limestone — Thence to New Albany ~~Blk slate~~ old Red Sandstone — Thence to Louisville. falls of Ohio Blk Slate. Thence Utica. Mouth Port. to Madison Gray Limestone — Thence. ~~Mouth~~ Big Bone River, Ivory,

Warsaw — Williamsport — Lawrenceburgh — Cincinnati Augusta and about 20 miles further Blue Limestone — Thence about 20 miles gray Limestone again — Thence 10 Miles, Clarks Gap or Blk Slate again — Thence to Portsmouth Old Red Sand Stone — Thence to Green = upsburgh R. conglomerate then to Pittsburgh Coal

Mississippi from Mouth of Ohio to Dubuke Iowa — 25 or 20 miles above

1st from Island to 12 or 13 Mi below Bryonville Landing on the the left Carbonifs. Limestone Thence nearly all the way on the L. and all the way on the R. to St. Genevieve Conglomerate or equivalent Sand. Thence —

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Mr B. Lawrence, after many years study of the geology of this western States, gives it as his opinion, that the whole territory, from the Alle=ghany to the Rocky mountains, and from the great Lakes ~~on the~~ or still further north, to the mid=dle of Alabama, was once one continued coal field; and that at Cincinnati, there must have been worn away four or five thousand feet of Super=incumbent Strata

~~There are supposed to be about~~
600 Species of fossil plants

Trilobite = a fossil animal found in the northern parts of Europe and in north & South America in the old fossiliferous rocks - the calymene Blumenbachii is one of these animals

Saurians = a tribe of fossil animals having the lizard form =

Ichthyosaurus - although this animal was of the Saurian tribe it resembled in some respect some fishes - hence its name

Plesiosaurus = (6 or 7 Species) this animal has the general structure of the Ichthyosaurus

it most remarkable differnce is the great lingth of its neck which has 33 vertebræ = it was Carnivorous

Iguana = a Kind of lizard

Iguanodon = an animal approaching in structure especially of the teeth, the living Iguana; from the immense size of this animals fossil remains it is supposed to have been near 100 feet Long = it was, like the living Iguana herbivorous

Ichnology or Ichnolithology = the history of the fossil foot marks; they are generally found in the New Red Sand Stone

Dodo = a bird of the genus didus which is the only instance on record of an entire species of birds that have become extinct that had been known and described by naturalists

Rabbit Snake = genus
= its name of species
= Talus

Fossil Elephant = Lieut. Kotzebue found the bones of the Elephant near Behrings Straits

At the mouth of the River Lena in Siberia, in 1798 the entire body of an Elephant with the flesh and skin was found frozen in a mass of Ice, by a Tungusian fisherman the drift along the shores of the arctic ocean abound with the bones of such animals (Cuvier) 1771, the entire carcass of a Rhinoceros was dug out of the

gravel of the same county — (Bakewell)

Alps — in the alps, rocks abound in organic remains from 6.000 to 8.000 feet above the sea: in the Pyrenees nearly as high; and in the Andes and Himalayas, at the hight of 16.000 feet — (Hitchcock)

Animalcula — in one place in Germany there is a bed 14 feet thick, made up of the shields of animalcula so small, that it requires 41.000.000.000 of them to form a cubic inch; and in another place, a similar bed is 28 feet thick — (Ehrnberg)

Similar beds are found all over New England and New York — (Hitchcock)

also in Virginia a deposite from 12 to 25 feet thick (Prof. Rogers)

from little than 1/5 once of stone, in Tuscany, Soldani obtained 10.454 chambred shells, like the nautilus: 4.00 or 5.00 of them weighed only a single grain; and of one species it took 1.000 to make that weight. these are all marine shells (Buckland)

Caterispora = a species of coral the fossil remains of which are found at most localities of Silurian limestone or Gray wack in Europe and North America (Hitchcock)

Pentacrinites — both fossil and recent Pentagonal stem and branches (Bakewell)

Encrinites — called entrochi — fossil Zoophytes Round and jointed Stems arms &c (Bakewell)

The Echini — or sea urchins of the Genus Spatangus, never lower than

the green sand and chalk (Bakewell)

Madreporic – marble – presenting animal remains in the shape of white or gray spots with regularly disposed dots and stars in the centre

Chalk – containing a notable quantity of magnesia, contains many MK short like grand (from Bakewell)

Geodes – hollow Isolated silicious concretions of crystalized quartz in Boyd Co Ky (Lawrence)

Bakewell – thinks the univalve moluscae were not inhabitants of deep seas. from the fact that they were provided with organs of sight which would have been useless under deep water

Mellite – or honey stone a Mineral resembling amber, becomes white when laid on red hot coal (Dr Ure)

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(it is sometimes whitish or brownish col)

Mr Joseph Atkinson
on left bank
Paducah
20/8

Sambucus Strigia. common
=on Elder — berries stained

Sanguinaria Canadensis
Puccoon —

Serpentaria — Virginia
Snake Root

Sinapis Nigra — common
Mustard

No 6. found near the Junction of
Powells & Clynch River

on this
Mr Smiths Pawpaw Creek
Gardenthis

Major Mundays & Taylor
Col Botton Raccoon Creek

Sarnajin for Mr Nuttall

John Whitson
Mr Gillen waters on White
Creek — on Tennessee River
12 to 15 Miles below Kingston
Kingston

on Mill creek about one
mile above the Creek and 100 yds
from the River are some curious
petrifactions

Cohutta mountain to
be run off to the E. and S. E

Wily Mrs. Nicholas Creek
Jasper Marion County
Tenn.

Singular Electrical Phenomenon
Seen at Owensboro July 29th 1846.

The day had been hot and Sultry
and a thunder Shower had come
up from the S.W. from which point
a cool breze was still blowing, when
I walked out on the river bank,
and was astonished to See numerous
Small dim lights Settle on my hat
rim. upon holding up in the
breze Several pointed instruments
both metallic and bad conductors
the Same would Settle on them but
but I observed that the light would
Soon leave when the experiment
was not made in the breze, or
when it ceased to blow—

Temperature of the breze which
was cooler than the atmosphere, not
in motion, about 68° Fah.
I tryed holding up a large bar
of Iron, but the light was not
so plainly visible upon it as
on the prongs of a pitchfork
which I afterwards tryed

To find Specific Gravity of solids
divide the weight of the body in
air by its loss in water (which is
the weight of its volume of water)
and the product is the Sp gravity

Hydrastis Canadensis or
Yellow Root

Hamamelis Virginiana
Witch Hazel

Diospyros virginiana
Persimmon